The Egyptian Heart Journal (2016) 68, 131–133

HOSTED BY

ELSEVIER

Egyptian Society of Cardiology

The Egyptian Heart Journal

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ORIGINAL ARTICLE

Perforation of anterior mitral leaflet aneurysm: A rare cause of severe mitral regurgitation

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Received 30 March 2015; accepted 23 June 2015
Available online 3 July 2015

KEYWORDS

Mitral regurgitation;
Aortic regurgitation;
Endocarditis;
Perforation;
Three dimensional echocardiography

Abstract Mitral valve perforation is a rare cause of severe mitral regurgitation. Infective endocarditis, connective tissue disease, cardiac surgery and aortic regurgitation jet are blaming causes of mitral valve perforation. We present a case of anterior mitral leaflet perforation accompanied with mitral valve prolapse identified by real-time three-dimensional transesophageal echocardiography.

1. Case Image

A 58-year-old man complaining of dyspnea for 3 months presented to outpatient clinic. He did not have a history of endocarditis, cardiac surgery or connective tissue disease. Physical examination revealed grade 4/6 systolic ejection murmur radiating to axilla and 3/6 early diastolic murmur radiating to apex. Electrocardiogram showed normal sinus rhythm. Transthoracic echocardiogram displayed ejection fraction of 65% and mitral valve aneurysm. Color doppler examination depicted severe mitral regurgitation and moderate aortic regurgitation. Two-dimensional (2D) transesophageal echocardiography (TEE) revealed perforation on anterior mitral valve leaflet and trileaflet aortic valve. Color doppler examination showed severe mitral regurgitation jet through the perforation directed posteriorly and central aortic regurgitation jet (Fig. 1). Real-time three-dimensional transesophageal echocardiography (RT-3D TEE) demonstrated the A2 scallop prolapsus and the exact location of perforation (Fig. 2). 3D color views better delineated spatial orientation of jets and magnitudes as well. Jet through the perforation was more significant than the central jet (Fig. 3). Mitral and aortic valve replacement was performed due to inadequacy of valve repair. Mitral perforation may be a result of infective endocarditis. Aneurysm of A2 scallop strongly supports endocarditis. However the patient denied any fever episodes and he insisted on gradual increase of symptoms. Additionally, neither vegetation was observed nor the blood cultures were positive. During surgery, there was prolapse of mitral and aortic valves but no vegetation. Although it is still plausible to accept

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Peer review under responsibility of Egyptian Society of Cardiology.

http://dx.doi.org/10.1016/j.ehj.2015.06.005

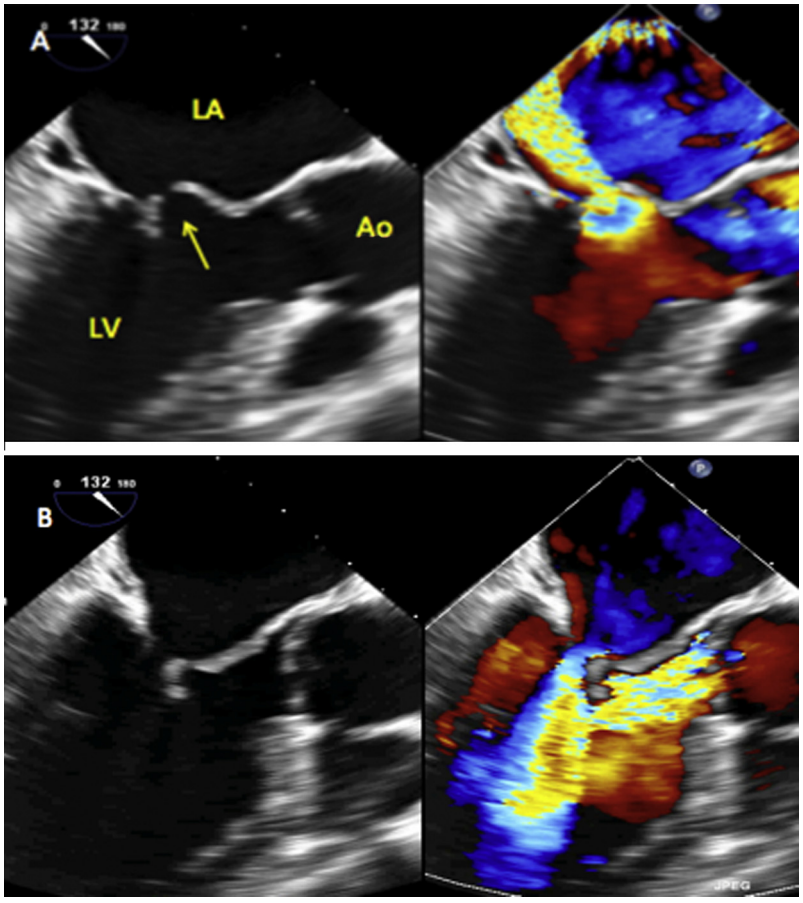

Figure 1 (A) Three chamber TEE view in systole showed aneurysm of A2 scallop and perforation (yellow arrow). Color doppler showed severe regurgitation jet directed posteriorly. (B) View in diastole showed moderate aortic regurgitation jet and relative mitral stenosis jet (LA: left atrium, LV: left ventricle, Ao: Aorta).

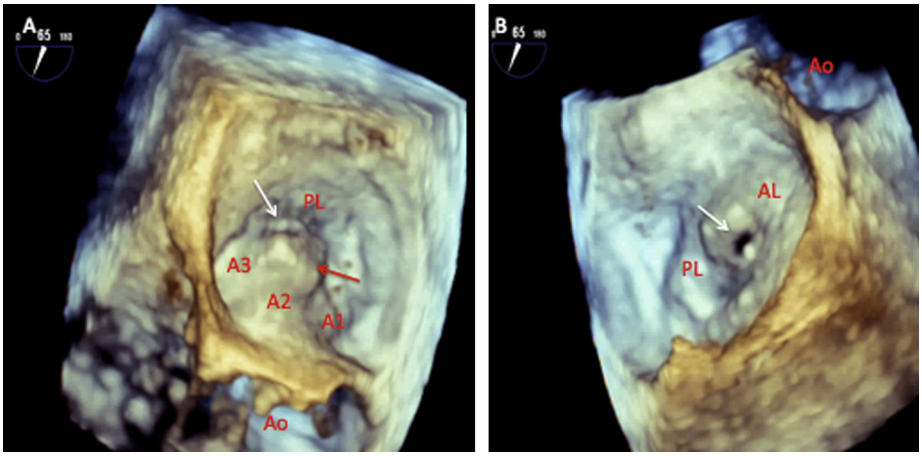

Figure 2 (A) 3D TEE view depicted A2 scallop aneurysm (red arrow). (B) En face visualization of perforation (white arrow) (AL: anterior mitral leaflet, PL: posterior mitral leaflet, Ao: aortic valve).

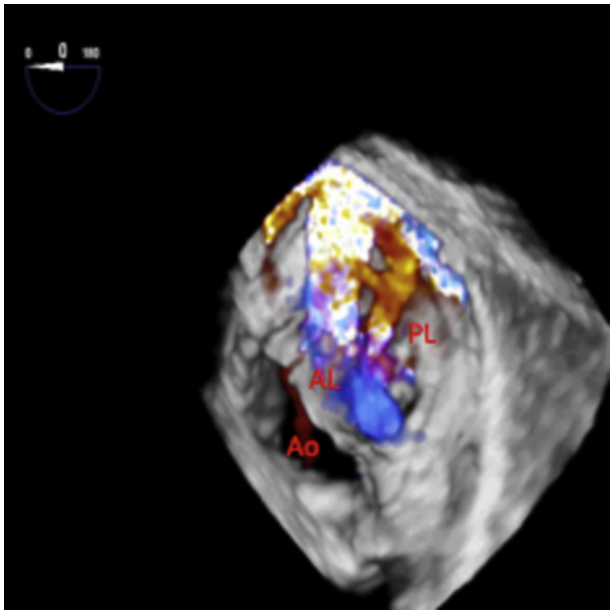

Figure 3 3D color doppler displayed spatial orientation and magnitudes of mitral regurgitation jets. Jet through perforation is severe.

endocarditis as an underlying pathology, some newer reports claimed that aortic regurgitation could be another cause of mitral perforation. Aortic regurgitation can cause erosive 'jet lesions' and subsequent perforations.[1] 3D TEE is the novel technique revealing exact location and size of mitral perforations. It may facilitate to repair perforation with percutaneous techniques such as mitraclip in future.

Data sharing

No additional data.

Contributorship

All of the authors contributed planning, conduct, and reporting of the work. All contributors are responsible for the overall content as guarantors.

Funding

No funding.

Competing interests

All of the authors have no conflict of interest.

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